

Special  
Insert on  
Enforcing  
HERS  
inside

## QUESTIONS and ANSWERS



### NONRESIDENTIAL



A nonresidential building is built without tenants to occupy it. The building has a common area and spaces for tenants. The builder installs the HVAC system chiller, boiler, fans and controls. They also install the distribution system for the common area, but do not run the HVAC system until the first tenant spaces are occupied. The builder does not install insulation at the time of construction, preferring to wait until tenants move in. Must the inspector write this up as non-complying with the energy efficiency code?



No. The energy efficiency code allows for speculative ("spec") buildings that are not occupied upon completion of the shell. Note that for common areas, where the HVAC system is fully installed, the envelope compliance must be completed. Not complying with the code at the time of initial construction carries consequences. For example, tenants located in areas of the building with large percentages of glass, or the last tenant to move in, may find that there is insufficient HVAC capacity to serve their area.

Buildings can comply on a component-by-component basis with mandatory and prescriptive measures. For example, if just the building's central mechanical plant is completed, it must comply with the applicable mandatory and prescriptive measures by using either the prescriptive or performance approach. Envelope, lighting and water heating compliance can wait until tenants move in. The prescriptive or performance approaches (except for lighting only, which is limited to the prescriptive approach) could be used. Under either of these options, lighting can achieve compliance by using the prescriptive options (whole building, area method or tailored lighting). For more information, see Section 2.2.2F, of the *Nonresidential Manual*.

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# QUESTIONS and ANSWERS

## NON RESIDENTIAL (continued)



Do the building energy efficiency standards apply to boilers, heat exchangers and related equipment that serve a process load?



No. The standards do not apply to equipment that serves a process load where that process load - or any recovered waste energy from that equipment - is not being used for space conditioning.

The standards apply **only** if the following conditions are met. First, the enclosed space is being heated or mechanically cooled by this process energy or by associated recovered waste energy. Second, the occupancy type of the building (type A, B, E, F, H, R, or S) is included in the energy standard. If either of these conditions is not met, then energy compliance does not have to be done.

Note that the equipment may need to comply with appliance standards requirements, depending on the type of equipment.



Do electric resistance floor heating systems need to be certified to the Energy Commission, and if not, are there other requirements?



No. There are no California requirements for electric resistance heating to be certified. An efficiency value is still required for compliance purposes, however, and may be acquired from the manufacturer's specification sheet.

## RESIDENTIAL AND NON RESIDENTIAL



Do solar daylighting tubes need to meet the same requirements as skylights?



A. No. The National Fenestration Rating Council (NFRC) now has an available methodology to standardize testing of solar daylighting tubing. For more information on the NFRC test method, phone (301) 589-1776.



For non-NFRC labeled solar daylighting tubes, use the Energy Commission's Default Table for the default thermal performance. If the diffuser is single pane, use the single pane default values. If the diffuser is double pane, use the double pane default values. (The diffuser is the piece that is attached to the conditioned side of the ceiling that helps distribute daylight into the space. The diffuser must be sealed and caulked to prevent infiltration into the conditioned space [Section 117 of the Standards]).

## Special Thanks to:

Suzie Chan, Tav Commins, John Eash, Gary Flamm, Al Garcia, Valerie Hall, Elaine Hebert, Rob Hudler, Bruce Maeda, Nelson Peña, Bill Pennington, Rob Schlichting, Mazi Shirakh, and Beverly Duffy for all their help in creating this edition of the *Blueprint*.

## Did You Know?



The Energy Efficiency Standards, Residential and Nonresidential Manuals, Adobe Acrobat software, and a link to the online training videos are now available on a single CD ROM. The cost for the general public is \$12 per CD. To obtain the CD using VISA or MasterCard, please

call the Energy Commission's Publications Unit at (916) 654-5200 and request publication number P400-02-007F. You may also pay by check by writing to:

California Energy Commission  
Publications Unit, MS-13  
1516 Ninth Street  
Sacramento, CA 95814-5512

One free CD is available for building departments by contacting the Energy Commission's Publications Unit at the above number!

Since 1975, California building and appliance standards have saved over \$33 billion in energy bills and the costs associated with building 46 –700 megawatt power plants. In energy terms, this represents 200 billion kilowatt hours of electricity use, plus 33 billion therms of natural gas, and a reduction of the peak load of over 5.6 million kilowatts.

The Energy Commission maintains a web site with information on energy-related rebates and other incentives available to individuals, businesses and builders. The information can be found at

[www.consumerenergycenter.org](http://www.consumerenergycenter.org)

You can receive automated electronic messages of activities at the Energy Commission by signing up on a list server. List server topics include the building energy efficiency standards, appliance standards, Title 24 field verification, HERS, new publications, and many other subjects. To sign up:

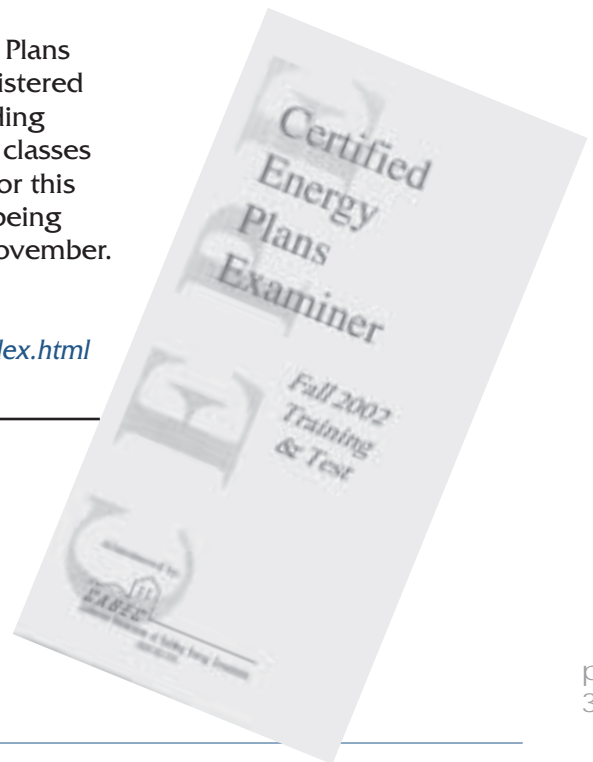
- go to [www.energy.ca.gov](http://www.energy.ca.gov)
- click on "list servers" (bottom left of the page) follow the on screen instructions
- click on "send subscription"

## Energy Training

Training to pass the Certified Energy Plans Examiner (CEPE) test is being administered by the California Association of Building Energy Consultants (CABEC). While classes for residential certification are over for this year, nonresidential classes are still being offered in October with testing in November. For class schedules and registration information go to: [www.cabec.org/](http://www.cabec.org/) or [www.energy.ca.gov/title24/training/index.html](http://www.energy.ca.gov/title24/training/index.html) or contact CABEC at 1 (909) 763-1234

Check the training calendars of utilities through the Energy Commission link! Go to: [www.energy.ca.gov/title24/](http://www.energy.ca.gov/title24/) and select Builder Training & CEPE Exam.

The New URL for Online Training Videos is [www.energyvideos.com](http://www.energyvideos.com)



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*Editor*

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Publication number P400-02-003

## The inside story:

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For any questions or additional information relating to the new  
Standards contact the Energy Hotline at (800) 772-3300.

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inside



# Enforcing HERS Third Party Field Verification

*How should building departments enforce any required "HERS Ratings?"  
To correctly enforce the Third Party Field Verification requirements of the Title 24 Energy Standards, the building official should ensure that the following steps are taken:*

## 1. KNOW YOUR RATERS

HERS raters are considered special inspectors and are responsible to the building department. You should be satisfied with their competence and that they meet Energy Commission conflict of interest requirements.

## 2. PLAN CHECK

- ✓ Locate the "HERS Verification" section on the CF-1R to see if a HERS rater is required for the project.
- ✓ Mark the plans to make sure that the Building Inspector knows that a HERS rater is required (such as circling the "HERS Verification" section of the CF-1R on the field set of plans – or red ink stamping on those plans, "HERS Rater/CF-4R Required," or just "HERS")

## BACK CHECK

- ✓ Make sure that the builder has a HERS rater lined up at the beginning of the project.
- ✓ Ask the builder to identify the HERS rater that is going to be used. Are you satisfied with this HERS rater? You can require a different certified rater if you wish. If the builder doesn't have a HERS rater lined up, get the builder to contact CHEERS to identify a HERS rater for the project.
- ✓ If the builder does not want to use a HERS rater, have them resubmit new energy calculations showing how compliance is achieved without measures that require third party field verification.

## 3. BUILDING INSPECTION

- ✓ Remind the field superintendent early on that you will need to see the CF-6R (completed and signed by the installer for every building) and the CF-4R (signed by the HERS Rater – builder may do "sampling" in production homes).
- ✓ If you have not already seen them, add the CF-6R and CF-4R to your "Final" punch list and encourage the superintendent to line up a HERS rater if that has not already occurred.

***When you enforce the HERS rating law, you are helping to reduce the peak electricity load and lower utility bills for homeowners, while ensuring that people are getting what they paid for and helping the builder avoid construction defect liability.***

See the Residential Manual, Chapter 4 – Compliance through Quality Construction, for more information about HERS requirements. [http://www.energy.ca.gov/title24/residential\\_manual/index.html](http://www.energy.ca.gov/title24/residential_manual/index.html)

**For more information about HERS raters contact CHEERS at  
[www.cheers.org](http://www.cheers.org) or call 1-800-4CHEERS (424-3377)**







## **PG&E's Energy Training Center-Stockton**

1129 Enterprise Street, Stockton, CA 95204 – (800) 244-9912 – (209) 932-2502 fax

# **Residential Courses**

**October - December 2002**

***Free  
Continuing  
Education for  
Building  
Industry  
Professionals***

***A great opportunity for your business and employees ...***

***Enroll today !!! - CALL: 1.800.244-9912***

***FAX: 209.932-2502 - E-MAIL: [pge.com/stockton](http://pge.com/stockton)***

Pacific Gas and Electric Company's Energy Training Center, Stockton—formerly called the Stockton Training Center—offers professional training courses for HVAC, window, and insulation contractors, as well as general contractors, builders, architects/engineers, and design community.

**All courses are free of charge.**

Class size is limited, so early registration is encouraged. Simply fax or mail the registration form on the back of this flyer. Note that extra sessions may be added based on demand; so if you can't make a date, check in with the office later in the season.

**For more information, call 1-800-244-9912 or visit our website at [www.pge.com/stockton](http://www.pge.com/stockton)**



***Pacific Gas and  
Electric Company™***

## Title 24 – Compliance Series

### 2001 Energy Standards Update for Residential Construction

This review and update will address changes as well as review new forms and documentation, new mandatory measures, and third party verifications. Session includes duct testing, radiant barrier, and high performance glazing demonstrations.

LENGTH: HALF DAY

TIMEFRAME: 9 A.M. TO 2 P.M.

WED., 10/30

TUES., 11/19

TUES., 12/10

### Air Distribution Diagnostic Testing

Review of Title 24 test and documentation requirements, plus hands-on experience operating duct tester, flow hood, digital manometer, and blower door equipment.

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 5 P.M.

Tues., 10/1 or Thurs., 10/24

Thurs., 11/7 or Thurs., 11/21

Thurs., 12/5

### Duct Design

Review of ACCA Residential Design System and approved software, Manual D procedure, and proper documentation. Learn how to achieve efficiency compliance while optimizing ductwork for competitive price and comfort.

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 5 P.M.

Tues., 10/22

Tues., 11/5 or Tues., 11/19

Tues., 12/3

### Equipment Sizing & Selecting

This course will review the following: ACCA load calculation and equipment selection process; room by room loads that lead into Manual D Duct Design (compliance credit component); safeguards for "right" sizing while avoiding undersizing; and ACCA-approved software.

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 5 P.M.

Wed., 10/2 or Mon., 10/21

Mon., 11/4 or Mon., 11/18

Mon., 12/2

## Whole House Issues

### Advanced AC/HP Diagnostic Tune-Up Overview

This one-day course will provide HVAC contractors with a detailed review of checking refrigerant charge. This course will be taught by Terry Norris of Advanced Energy Corporation of North Carolina. Terry is a former manufacturer's representative, and a national expert in the field of residential HVAC system installations.

LENGTH: ONE DAY

TIMEFRAME: 8:30 A.M. TO 5 P.M.

ENROLLMENT: 20 MAX

TUES., 10/22 OR WED., 10/23

WED., 11/13 OR THURS., 11/14

TUES., 12/10 OR WED., 12/11

### Biggest Energy Mistakes Made in Residential Construction

A home's energy performance often looks good on paper, but does not always meet the customer's expectations with regard to comfort and energy costs. This presentation, developed from working with field problems, focuses on technologies and installation practices that provide the "biggest bang for the buck" when it comes to making homes more energy efficient. Instructor Steve Easley, a Discovery Channel television personality, uses field slides to illustrate cost effective solutions to building energy efficient homes that are practical and long lasting.

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 5 P.M.

MON., 11/25

### House as a System

Taught by national building performance experts, this course addresses the interaction of the HVAC system, the building envelope, and the rest of the house. Learn to test and verify the performance of the whole house as a system, and understand the interrelationships among comfort, energy efficiency, durability, and health and safety.

LENGTH: THREE DAYS

TIMEFRAME: 9 A.M. TO 5 P.M.

Tues. - Thurs., 11/19-21

### House as a System Overview

If you have reservations about attending the three-day House as a System course, this one-day overview offers highlights of the whole house approach.

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 5 P.M.

Mon., 11/18

### HVAC Quality Installation

Training details national standards for "quality installation" of HVAC systems and offers tips from nationally renowned experts. John Krigger and Rick Falke will present valuable information to HVAC contractors. Don't miss this free opportunity.

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 5 P.M.

Tues., 10/8 or Wed., 10/9

Thurs., 11/14 or Fri., 11/15

### Insulate Right!

Learn about installation techniques and inspection criteria for both ceiling and wall insulation, including laboratory instruction in the Energy Training Center's on-site attic.

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 3 P.M.

Thurs., 10/10

Wed., 11/13

Tues., 12/10

## Informational Sessions

### 2002 Home Energy Efficiency Rebate Program

Details regarding rebate amounts, product/equipment specifications, and application and documentation requirements for the current rebate programs.

These informational sessions are optional, and are not required for your customers to receive a rebate.

LENGTH: ONE AND A HALF HOURS  
TIMEFRAME: 9 A.M. TO 10:30 A.M.  
AND REPEATED AT 2 P.M. TO 3:30 P.M.  
EVERY WEDNESDAY  
STARTING 9/18/02 AND  
ENDING 10/30/02

## Title 24 – Compliance Series

### Duct Installation Standards

Review of the latest Title 24 standards for airtight ducts. Full explanation of UL181 requirements, approved materials, installation criteria, sealing and testing requirements, and duct insulation. Students receive binder with resource materials.

LENGTH: HALF DAY

TIMEFRAME: 9 A.M. TO 12 P.M.

Fri., 10/25

Fri., 11/8 or Fri., 11/22

Fri., 12/6

### Zoning Loads & Duct Design

This one-day program will build upon the knowledge gained in the T-24 Equipment Sizing & Selecting and T-24 Duct Design courses (prerequisites for this course). Students will learn how to successfully solve residential comfort and energy problems using zoned systems. The class will include "real world" examples with results of zoning solutions that work. The types of zoning hardware and Title 24 credit for zoning will also be reviewed.

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 5 P.M.

Wed., 10/23

Wed., 11/6 or Wed., 11/20

Wed., 12/4

## Windows

### High Performance Windows

Learn all about the benefits of high-performance fenestration products. Lecture and demonstrations address cost, energy savings, comfort, air quality, and Title 24 compliance.

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 5 P.M.

Thurs., 10/17

Thurs., 11/14

Thurs., 12/5

### Training Location

All classes will be offered at:  
**Pacific Gas and Electric Company's Energy Training Center, 1129 Enterprise Street in Stockton.**

## New Courses



### Controlled Ventilation

National building science expert Dr. Joseph Lstiburek presents a one-day course on mechanical ventilation systems in residential buildings. Topics include:

- How tight is too tight?
- Natural versus mechanical ventilation
- Ventilation system sizing
- Sources of indoor air pollution

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 5 P.M.

Fri., 11/22

### Pool Filtration at Half the Cost

This class focuses on pool pumping technology that can reduce a pool owner's filtration cost by 50%. Find out how to keep your customers happy and save them a bundle in the process. Give them a better option than resetting their timers. Yes, it is possible to have both clean pools and big dollar savings!

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 5 P.M.

Wed., 10/16

Wed., 11/6

### Principles of Energy

What is the difference between a kilowatt and a kilowatt hour? Why is gas measured in therms? How do you determine if HVAC equipment is energy efficient? Why is the customer still cold when the thermostat says 78°? If heat doesn't rise, why is the ceiling warm? Find out the answers to these and other energy principles in this half-day class.

LENGTH: HALF DAY

TIMEFRAME: 9 A.M. TO 12 P.M. AND

REPEATED AT 1 P.M. TO 4 P.M.

Thurs., 11/7

Tues., 12/3

### The Geoexchange Alternative

Geoexchange systems (ground source heat pumps) use the earth's energy as a heat source in the winter and a heat sink in the summer. In California, geoexchange savings can exceed 50% for heating and 30% for cooling. A proven energy efficient technology, such systems have been installed throughout Northern California. Take this opportunity to learn about geoexchange systems!

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 5 P.M.

Wed., 10/30

### The Truth About Motors, Fans & Pumps

Motors, fans and pumps in residential applications represent an area in which significant opportunities exist to reduce inefficient energy use. Come and learn more about ways of reducing energy usage.

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 5 P.M.

Thurs., 10/10

### Turn Trash Into Cash!

De-Construction is a cost-effective way to remove residential and commercial structures to maximize material recovery. De-Construction is an alternative to traditional demolition methods by:

- **Reducing** costs of removal and volume of waste compared to demolition and securing tax benefits from donations.

- **Recycling** up to 85% of a building's material for reuse, thus reducing tipping fees and environmental impact of construction practices.
- **Reusing** building materials, by taking them out of the waste stream and creating job opportunities in a developing field.

LENGTH: TWO HOURS

TIMEFRAME: 9:30 A.M. TO 12 P.M.

AND REPEATING AT 1:30 P.M. TO 4 P.M.

Wed., 10/2

### See the Heat!

The actual energy performance of residential thermal envelopes is getting worse, not better. Homes are getting more and more architecturally complex with: arches, columns, thick walls, plan shelves, attic kneewalls, etc. This class demonstrates how to assess the performance of existing and new construction using infrared cameras, non-contact thermometers, visual inspection and blower doors.

LENGTH: ONE DAY

TIMEFRAME: 9 A.M. TO 5 P.M.

Tues., 10/29



# Registration

To enroll, fax this form to **209-932-2502** or mail it to the **Energy Training Center, 1129 Enterprise Street, Stockton, CA 95204**. If you have any questions, please call **1-800-244-9912**.

PLEASE PRINT

Course

Date

Name

Phone

Course

Date

Fax

Course

Date

E-Mail

Company Name

Course

Date

Company Address

Course

Date

City

State

Zip

You will receive a confirmation letter, including a map to the training location, before the day of the class. If you are unable to attend or need to reschedule, please let our office know as soon as possible as we are making every effort to keep our costs down. Your cooperation is greatly appreciated.  
The Energy Training Center, Stockton, is funded by California utility customers and administered by Pacific Gas and Electric Company under the auspices of the California Public Utilities Commission.